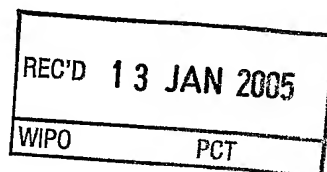




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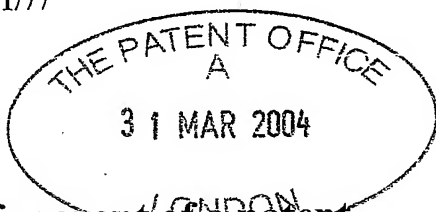
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31 MAR 2004

1. Your reference

P513590GB-1/DCJ/P51103/001

2. Patent application number

(The Patent Office will fill in this part)

0407375.5

3. Full name, address and postcode of the or of each applicant (underline all surnames)

Imperial Chemical Industries plc.  
20 Manchester Square  
London  
W1U 3AN  
United Kingdom

Patents ADP number (if you know it)

00000935006

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

Container Closure Arrangement

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

WITHERS & ROGERS  
Goldings House  
2 Hays Lane  
London  
SE1 2HW

Patents ADP number (if you know it)

1776001 ✓

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

UK

0328160.7

04/12/03

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

YES

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Continuation sheets of this form

Description	6
Claim(s)	3
Abstract	0
Drawing(s)	4 + 4

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Priority documents	-
Translations of priority documents	-
Statement of inventorship and right to grant of a patent (Patents Form 7/77)	-
Request for preliminary examination and search (Patents Form 9/77)	-
Request for substantive examination (Patents Form 10/77)	-
Any other documents (please specify)	

11. I/We request the grant of a patent on the basis of this application.

Signature

Date

Withers & Rogers.

WITHERS & ROGERS

31st March 2004

12. Name and daytime telephone number of person to contact in the United Kingdom
- |               |                     |
|---------------|---------------------|
| D Colin Jones | +44 (0)20 7663 3500 |
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P513590GB-1

### Container Closure Arrangement

This invention relates to a closure arrangement for a container and to a container closed thereby. The closure arrangement is conveniently relockable. The invention finds  
5 particular, though not exclusive, application to closing containers of liquids, for example paint.

Cans of paint, for example, are often simply closed with a lid that has an outwardly-directed rim that is press-fitted into the top of the container. Removal of the  
10 lid may be made by means of insertion of the blade of a screwdriver and twisting to prise off the lid. The lid can subsequently be replaced to re-close the container, but usually the mating surfaces of the lid and container become damaged, and can become coated with dried contents of the container, with the result that a significant effort has to be exerted to re-close the container, and even then a seal may not be effected, which can  
15 cause spillage and/or deterioration of the contents.

More complex closure arrangements are also known. WO 03/062081 A1 discloses a relockable closure for a container, comprising a cover and a skirt that is foldable to lock the cover onto the container. The closure requires a convoluted curl shape to be formed  
20 on the outside of the container at its rim. A metal cover for the container is provided with a separate peripheral skirt attached thereto that depends downwardly therefrom and has a fold point that allows a curved rib to be deployed downwards so as to engage beneath the curl of the container. A sealing compound is provided between the metal cover and the rim of the container. The skirt may be separated into a plurality of  
25 sections by slits to facilitate its folding down around the outside of the container so as releasably to lock the cover thereon. It will be appreciated that this closure requires several components and complex shaping in order to be effective.

US-A-3688942 discloses a simpler form of container and closure combination, in  
30 which the body of the container at its open end is shaped to provide a radially-outwardly and downwardly directed peripheral skirt portion. The closure is

also provided with a peripheral skirt portion with a plurality of latch members attached thereto by integral flexible hinge walls. The latch members engage the free edge of the container skirt portion in a cam and cam follower manner so as to secure the closure to the container, with a compressible seal being provided therebetween.

5

Whilst each of WO 03/062081 A1 and US-A-3688942 provides a relockable closure for a container, release of the cover from the container is effected by a part thereof that extends beyond the periphery of the container, which can give rise to unintentional freeing of the closure and risk of spillage of the contents of the container.

10

US-A-1482931 discloses a covered receptacle in which a can has a rolled-over rim and is closed by a cover having an annular depending flange. A pair of spring-mounted levers are secured to the lower end of the flange diametrically opposite each other, and are shaped to engage beneath the rim of the can to lock the cover thereon.

15

In accordance with one aspect of the present invention, there is provided closure arrangement for a container, wherein the container has a peripheral wall defining a rim enclosing an opening at one end thereof, the peripheral wall having at least one outwardly-directed projection extending at least partially around the outer surface of the wall adjacent the opening, and wherein a cover is provided for releasably closing the opening, the cover having a surface for closing the opening of the container and a skirt depending therefrom to enclose the projection of the container, the skirt being provided with at least one hinged locking member that has (a) an inwardly-directed projection for co-operating with the outwardly-directed projection of the container, and (b) a lip for passing over the rim of the container at the opening thereof and engaging onto the cover, thereby to lock the cover to the container, with the respective inwardly-and outwardly-directed projections engaging with each other.

20

25

30

In contrast with US-A-1482931 referred to above, it will be appreciated that the closure arrangement of the present invention provides a positive engagement of the locking member(s) onto the cover thereof.

The closure arrangement of the present invention requires comparatively few components, comprising in its most basic form, a suitably-shaped rim of a container, and a cover that serves to close the container and to effect locking thereonto by one, or more, integral hinged locking members.

5

With locking of the container being brought about by an upward movement of the locking member(s) to effect, preferably a snap-fit, connection over the rim of the container onto itself, the free ends of the locking members may be safely and visibly contained within the periphery of the container, thus mitigating against accidental release.

10

It is also pointed out that the locking members in their locked position are in a relaxed configuration rather than being held in tension. This avoids the potential problem of creep of the plastics material, whilst maintaining vertical pressure on the outwardly - directed projection of the container.

15

It will be appreciated that the audible snap-fitting of the locking members will provide an indication to the user that they are securely in place.

20 The cover and the skirt are preferably formed integrally with one another, and the or each locking member is preferably formed integrally with the skirt, preferably being hinged thereto by a living hinge. Alternatively, the or each locking member may be secured to the skirt by a respective separate hinge.

25

Preferably, a window is formed in the skirt at the peripheral location of the or each locking member, whereby upon locking the cover onto the container, the locking member fits into its window and the respective inwardly- and outwardly-directed projections engage each other directly.

30

Since the cover and the container, in the absence of any liner, will be in contact with the contents of the container, they will be made from a relatively inert material. For example, they may be made of a plastics material, preferably by moulding. These parts

may be made by a comparatively inexpensive blow moulding process using polyethyleneterephthalate, for example. However, it is also envisaged that metal may be used in appropriate circumstances.

- 5 The or each locking member may be recessed into an otherwise substantially planar top surface of the cover, to provide further protection against accidental release of the closure arrangement from the container.

10 Preferably three locking members are provided for a closure arrangement of generally circular configuration, being equi-spaced around the cover, although two, or four or more, may be used if required. Where the configuration is rectilinear, then it is envisaged that at least one locking member would be provided for each side of the arrangement, or alternatively, a locking member may be provided at each corner of the container.

15 Whilst preferably the outwardly-directed projection on the surface of the container extends continuously therearound, thus allowing the cover to be fitted thereto in any orientation, it is envisaged that it may be provided by a plurality of discrete sections. In the latter case, the number of sections would advantageously be the same as the number  
20 of locking members, thus requiring the cover to be appropriately positioned on the container in order to effect locking therebetween.

In accordance with another aspect of the present invention, there is provided the combination of a container and a closure arrangement in accordance with the said one  
25 aspect of the present invention.

Advantageously, the exterior of the base of the container is provided with one or more recesses to facilitate gripping thereof by a user.

30 A closure arrangement for a container will now be described, by way of example, with reference to the accompanying drawings, in which:



Figure 1 is a plan view of the arrangement with two locking members thereof in the locked state and a third locking member in the unlocked state;

Figure 2 is a sectional elevation on the line A-A of Figure 1 showing the closure arrangement in the unlocked state;

5 Figure 3 is a sectional elevation on the line B-B of Figure 1, showing the closure arrangement in the locked state;

Figure 4 is a plan view of the top of another embodiment of the closure arrangement; and

Figure 5 is an underneath view of a container for use with the closure arrangement.

10

Referring to the Figures, a cylindrical container 2, made of a plastics material for containing emulsion paint, is closed by a moulded plastics cover 4. The container 2 has a generally rectangular-sectioned projection 6 extending circumferentially therearound on its outer surface, adjacent a rim 8 at its open end.

15

The cover 4 has a planar dished upper surface 10 that sits within the container rim 8, and has three hinged locking members 12 equi-spaced therearound which are set into a downwardly-depending skirt 14 of the cover 4. The cylindrical inner surface of the skirt 14 is of such a diameter as to form a sliding fit over the circumferential projection 6 on the outside of the container 2.

20

Each locking member 12 is formed interally with the skirt 14 and can be hinged away from the lower circumferential edge 16 thereof by means of a live hinge 18 (Figure 2) exposing a window 15 in the skirt 14. The hinged portion of the locking member 12 is of generally L-shape, having a lower part 13 extending away from the hinge 18 that is provided adjacent thereto with an inwardly-directed generally rectangular-sectioned projection 20, of generally the same size and shape as the container projection 6. The projections 6 and 20 are longitudinally displaced from the upper ends of the container 2 and cover 4 respectively, such that when the locking member 12 is moved from its unlocked position (Figure 2) to its locked position (Figure 3), the locking projection 20 engages the outer wall of the container 2 immediately below its projection 6. In the locked position, the upper part 22 of the locking member 12 passes over the container

30

rim 8 with its free hooked end 24 snap-fitting over a locally-thickened wall portion 26 of the raised rim of the cover 4. This engagement of the locking member 12 onto the upper rim of the cover 4, whilst simultaneously bringing the projections 6 and 20 into engagement, is effected as a snap action, thus providing an audible indication that the cover 4 has been properly secured onto the container 2.

It will be appreciated, that, in the locked configuration, upward pressure on the free ends 24 of the locking members 12, will force the hinges 18 open so that the cover 4 removed from the container 2. Sealing and opening of the container 2 can be effected repeatedly.

It will also be noted, that the hinging of the locking members 12 on the cover skirt 14 is on the outside of the container 2, and thus is not, in normal use, contacted by the container contents. Thus there is no interference of the locking members 12 by the contents of the container 2.

Figure 4 shows a top plan view of a modification of the arrangement of Figures 1 to 3. A circular cover 30 for the container (not shown) has three hinged locking members 32 equi-spaced therearound, shown in the locked position. However, in contrast to the previously - discussed embodiment, the central cover surface 34 is not dished, but is substantially flush with the upper surface of the locking members 32. The surface 34 is, however, provided with a scalloped region 36 adjacent each locking member 32 to facilitate lifting thereof for unlocking the cover 30 from the container. The planar top to the closure arrangement, with the recessing of the locking members, further mitigates against accidental opening of the container.

Figure 5 shows the underside of a container 40 in which a scalloped region 42 is moulded or otherwise indented into the base to facilitate gripping of the container by a hand during use.

**Claims**

1. Closure arrangement for a container, wherein the container has a peripheral wall defining a rim enclosing an opening at one end thereof, the peripheral wall having  
5 at least one outwardly-directed projection extending at least partially around the outer surface of the wall adjacent the opening, and wherein a cover is provided for releasably closing the opening, the cover having a surface for closing the opening of the container and a skirt depending therefrom to enclose the projection of the container, the skirt being provided with at least one hinged locking member that has (a) an  
10 inwardly-directed projection for co-operating with the outwardly-directed projection of the container, and (b) a lip for passing over the rim of the container at the opening thereof and engaging onto the cover, thereby to lock the cover to the container, with the respective inwardly-and outwardly-directed projections engaging with each other.
- 15 2. Closure arrangement according to claim 1, wherein the cover and the skirt are integrally formed with one another.
3. Closure arrangement according to claim 1 or claim 2, wherein the or each locking member is integrally formed with the skirt.
- 20 4. Closure arrangement according to any one of the preceding claims, wherein a window is formed in the skirt at the peripheral location of the or each locking member, whereby upon locking the cover onto the container, the locking member fits into its window and the respective inwardly- and outwardly-directed projections engage each  
25 other directly.
5. Closure arrangement according to any one of the preceding claims, wherein the lip of the skirt, upon locking the cover to the container, engages over a rim of the cover that is arranged to lie within the peripheral wall of the container adjacent the rim  
30 thereof.

6. Closure arrangement according to claim 5, wherein the thickness of the rim of the cover is locally increased in the region of the or each hinged locking member.

7. Closure arrangement according to any one of the preceding claims, wherein the or each hinged locking member is arranged to snap-fit over the rim of the container.

8. Closure arrangement according to any one of the preceding claims, comprising two or more, preferably three, of said hinged locking members.

9. Closure arrangement according to anyone of the preceding claims, of generally circular configuration.

10. Closure arrangement according to any one of the preceding claims, wherein the cover is made, preferably moulded, from a plastics material.

11. Closure arrangement according to any one of the preceding claims, wherein the surface of the cover for closing the container lies substantially flush with the top of the or each locking member when in the locked position.

12. Closure arrangement for a container, substantially as hereinbefore described with reference to the accompanying drawings.

13. A container and a relockable closure arrangement therefor, the arrangement being in accordance with any one of the preceding claims.

14. A container and closure arrangement according to claim 13, wherein the outwardly-directed projection of the container extends completely around the peripheral wall thereof.

15. A container and closure arrangement according to claim 13 or 14, wherein the exterior of the base of the container is recessed to facilitate gripping thereof.

16. A container and a relockable closure arrangement, substantially as hereinbefore described with reference to the accompanying drawings.



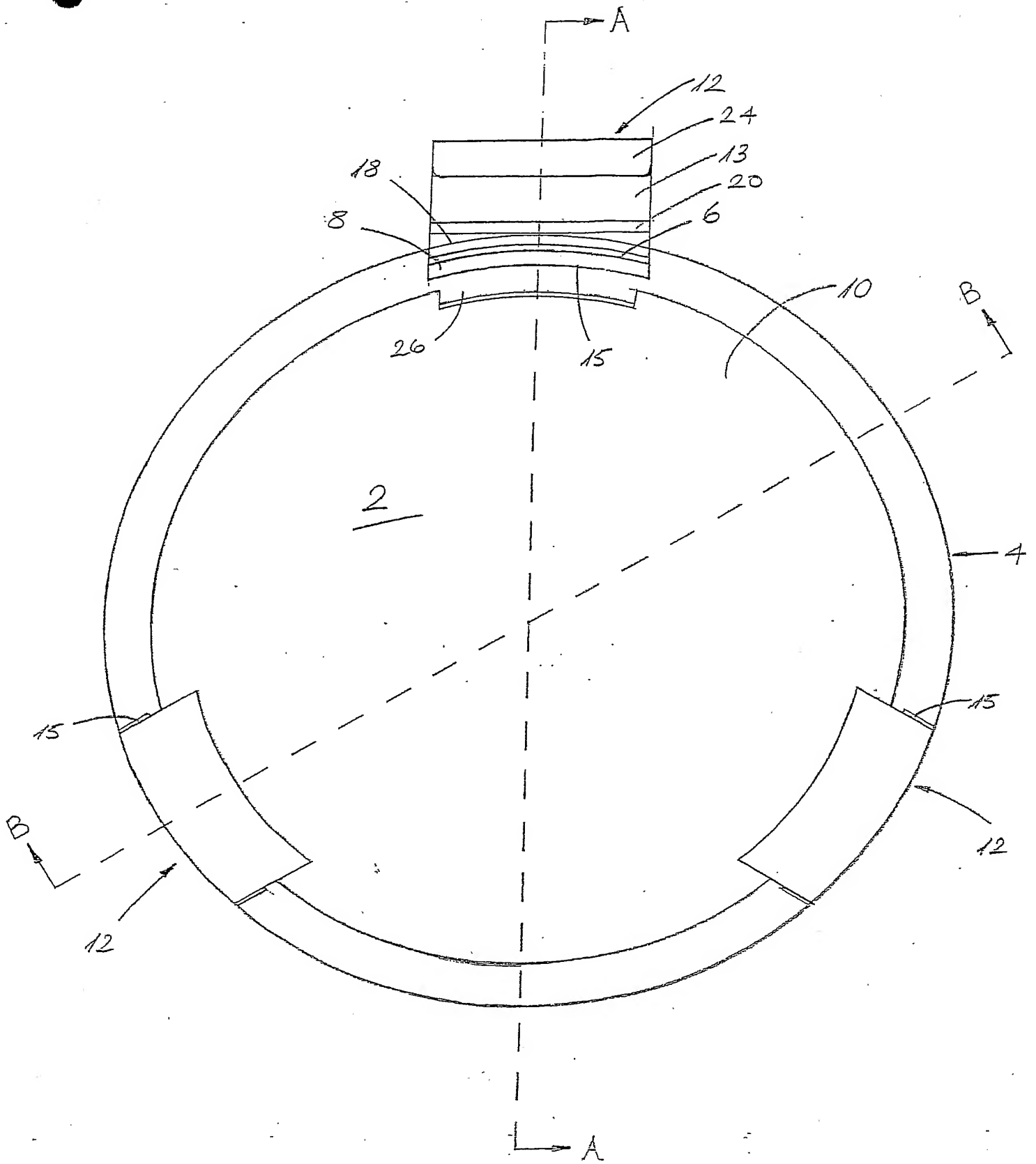
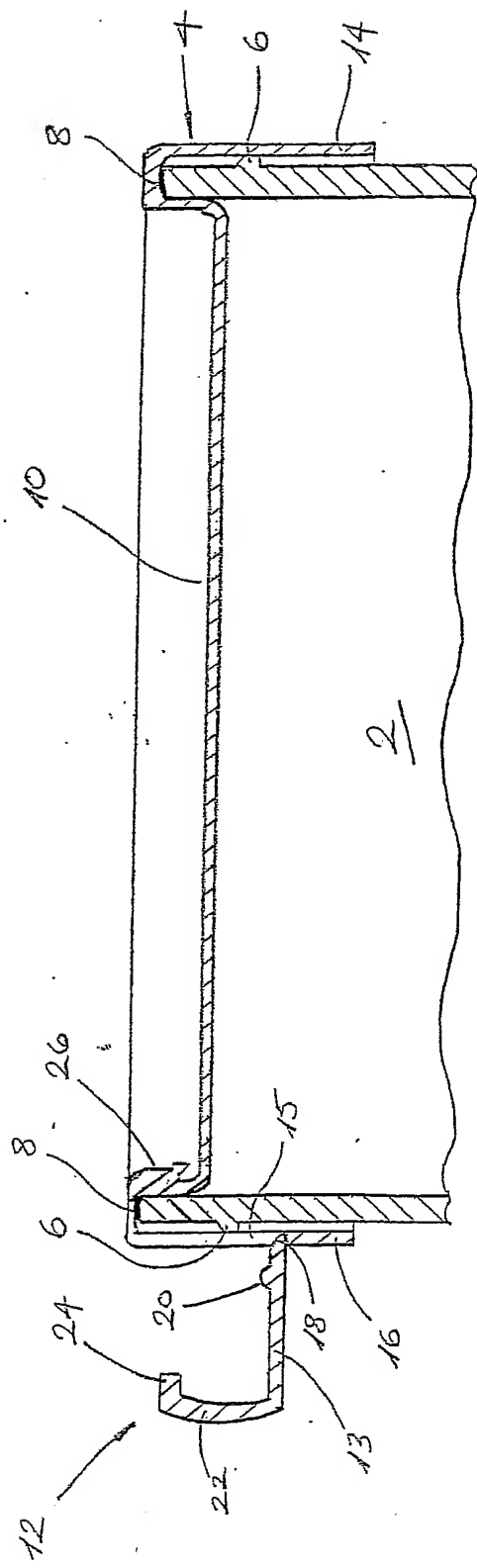


FIGURE 1.









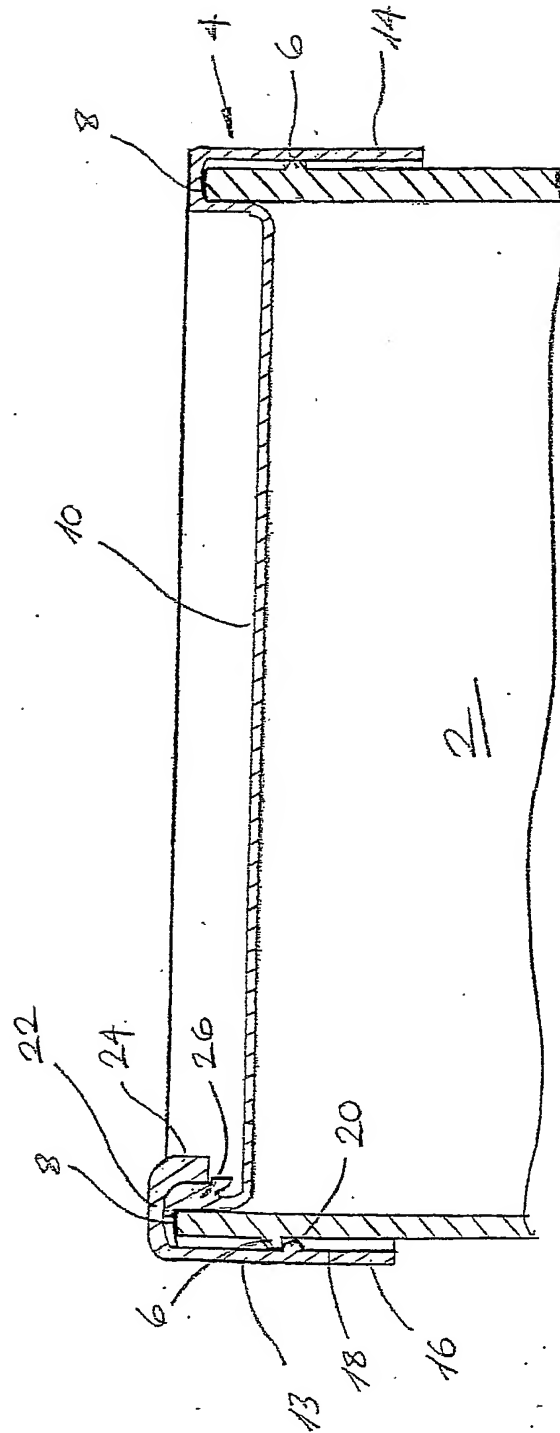


FIGURE 3



Figure 4

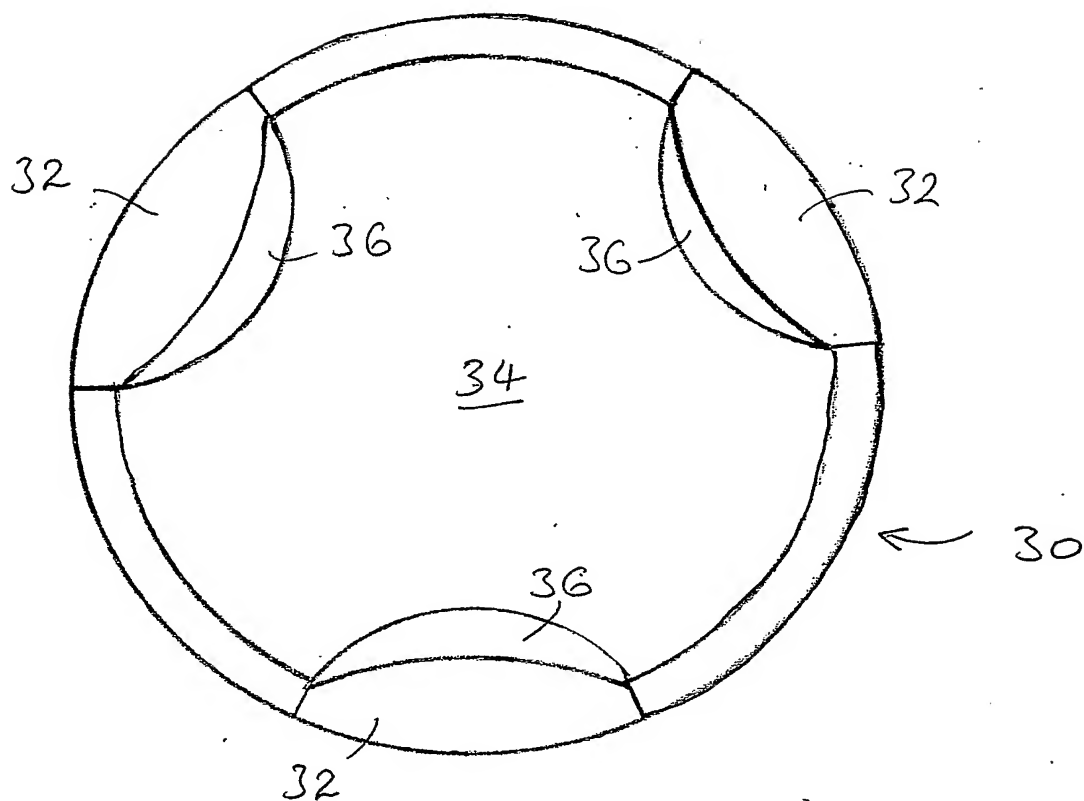
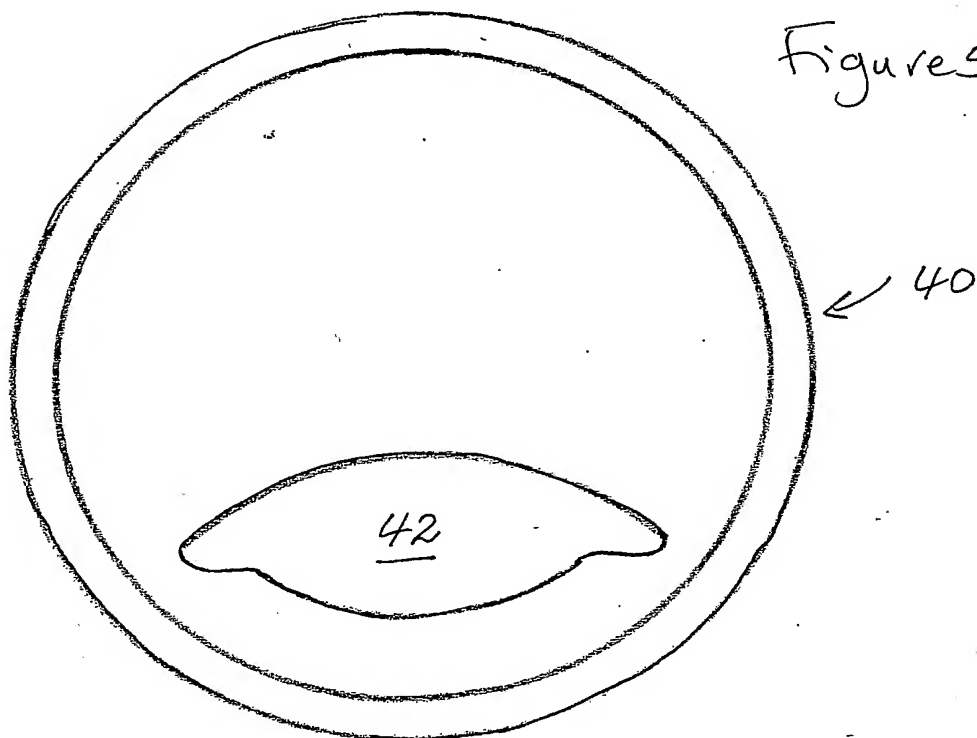


Figure 5



PCT/GB2004/005103

